



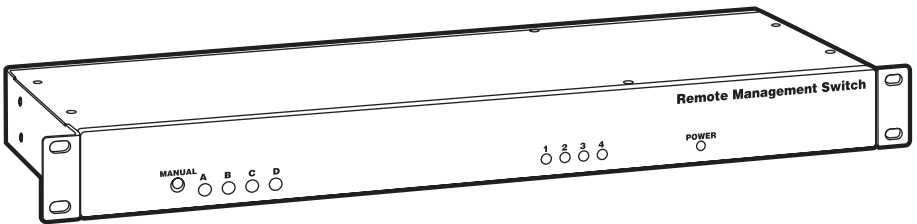
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## Remote Management Switch



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**FEDERAL COMMUNICATIONS COMMISSION  
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RADIO FREQUENCY INTERFERENCE STATEMENTS**

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart J of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

*This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of Industry Canada.*

*Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par Industrie Canada.*

### NORMAS OFICIALES MEXICANAS (NOM) ELECTRICAL SAFETY STATEMENT

#### INSTRUCCIONES DE SEGURIDAD

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.
2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.
3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.
4. Todas las instrucciones de operación y uso deben ser seguidas.
5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc..
6. El aparato eléctrico debe ser usado únicamente con carritos o pedestales que sean recomendados por el fabricante.
7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.
8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.
9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.
10. El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.
11. El aparato eléctrico deberá ser conectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.

12. Precaución debe ser tomada de tal manera que la tierra física y la polarización del equipo no sea eliminada.
13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.
14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.
15. En caso de existir, una antena externa deberá ser localizada lejos de las líneas de energía.
16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.
17. Cuidado debe ser tomado de tal manera que objetos líquidos no sean derramados sobre la cubierta u orificios de ventilación.
18. Servicio por personal calificado deberá ser provisto cuando:
  - A: El cable de poder o el contacto ha sido dañado; u
  - B: Objetos han caído o líquido ha sido derramado dentro del aparato; o
  - C: El aparato ha sido expuesto a la lluvia; o
  - D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o
  - E: El aparato ha sido tirado o su cubierta ha sido dañada.

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# 1. Specifications

**Speed:** 300 bps to 115.2 kbps

**Character Format:** 8 data bits, no parity, and 1 stop bit; *or* 7 data bits, even or odd parity, and 1 stop bit

**Interface:** RS-232 asynchronous

**Connectors:** (4) DB25 subminiature female for ports A through D; (1) DB25 subminiature male for master port (pins supported: 1–8, 20)

**Power:** SW555A, SW556A: Input: 120 VAC, 60 Hz, via a standard NEMA 5-15 plug on a 6-ft. (1.8-m) 14/3 line cord; Outlets: Standard NEMA 5-15 receptacle; Current maximums: 15 amps per receptacle, 15 amps combined total of all receptacles; SW555AE, SW556AE: 230 VAC, 50 Hz

**Size:** 1.75"H x 19"W x 6.25"D (4.5 x 48.3 x 15.9 cm)

**Weight:** 5 lb. (2.3 kg)

## 2. Introduction

The Remote Management Switch (part number SW555A or SW555AE) can be used for serial switching and as an AC power control system. A Remote Management Switch with Modem (part number SW556A [includes 33.6 kbps modem] or SW556AE [includes 56 kbps modem]) is also available.

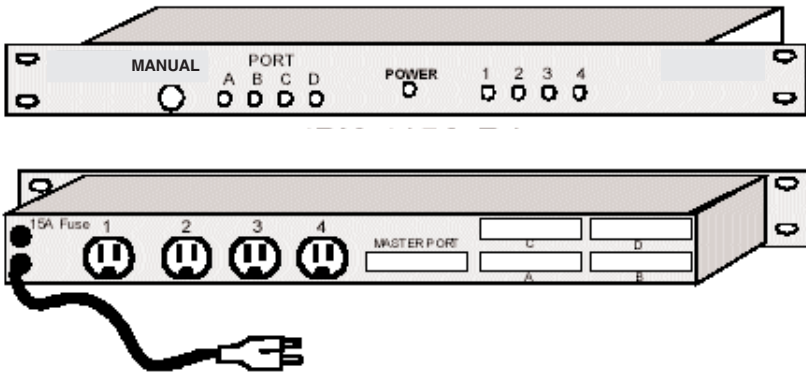


Figure 2-1. Front and rear views of the Switch.

### 2.1 Port Selector

As a port selector, the Remote Management Switch allows one master RS-232 asynchronous channel to be selectively switched to any of up to 4 ports. You can use the Switch as a port selector to provide access from one modem or terminal to multiple systems. Typically, you can use the Switch to access out-of-band management ports on multiple devices. By using simple escape strings or menu commands, you can select which port to access. Ports can also access the master by raising a control lead. While accessing a port, the Switch is passive, allowing all data to pass until it receives a user-programmable command.

### 2.2 Power Controller

You can control the four AC outlets on the Remote Management Switch. The Switch accepts code or menu commands from its master port to power on, off, or reboot the outlets.

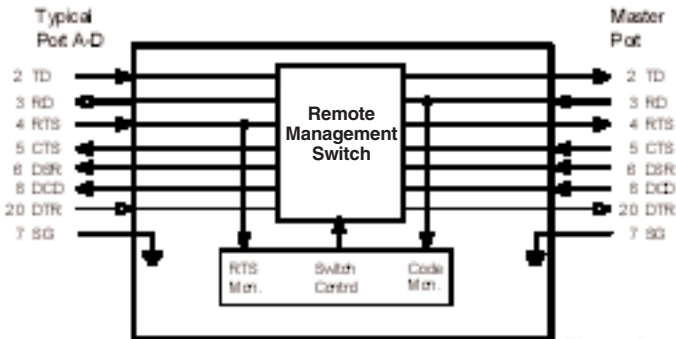
# 3. Installation

## 3.1 Master and Switched Ports

Connect the Remote Management Switch's ports A through D found on the rear of the unit to your RS-232 devices. Each port uses a DB25 subminiature connector and supports the following leads for asynchronous communications.

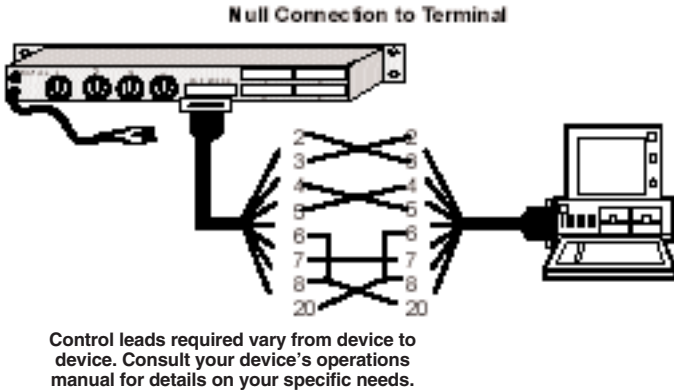
**Table 3-1. DB25 connector supported leads.**

Pin	Designation
2	Transmit Data
3	Receive Data
4	Request to Send
5	Clear to Send
6	Data Set Ready
7	Signal Ground
8	Data Carrier Detect
20	Data Terminal Ready



**Figure 3-1. System diagram.**

The four switched ports, A through D, are wired DCE (output data on pin 3, RD). The master port is wired as DTE. To directly connect a terminal device to the master port, you need a null-modem cable (see Figure 3-2).



**Figure 3-2. Null-modem connection.**

## 3.2 RTS/DTR Selection

### WARNING

To avoid electrical shock, you **MUST** remove power to the Remote Management Switch **BEFORE** opening the top cover.

Jumpers JP1 through JP4 let you select RTS (default) or DTR as the control lead used for lead control. To access these jumpers, disconnect the power source and remove the top cover of the Remote Management Switch. The jumpers are located behind the B and D port connectors (see Figure 3-3).

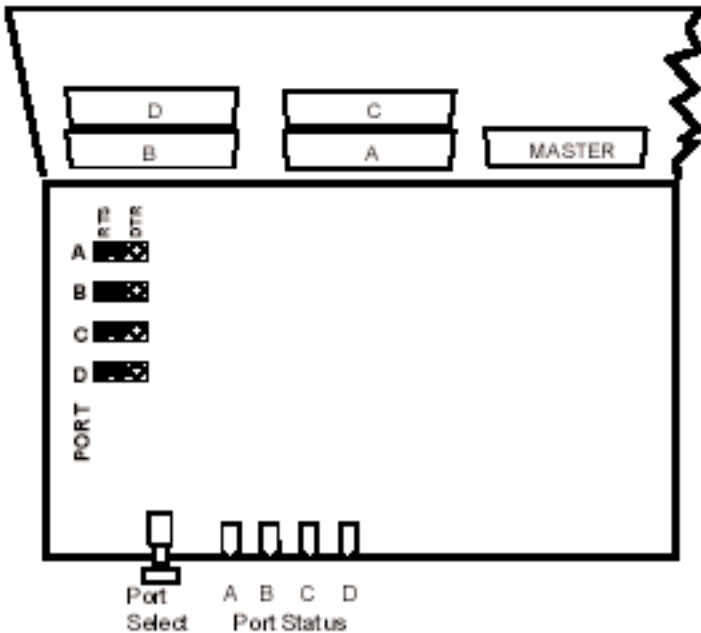


Figure 3-3. Location of components.

### 3.3 Internal Modem Option (SW556A, SW556AE)

An internal modem is included in two models of the Remote Management Switch. Part number SW556A features a 33.6-kbps modem, while part number SW556AE incorporates a 56-kbps modem.

Connect the modem to the dial line via an RS-232 to modular adapter (included). This adapter connects to the master port and to an RJ-11 modular jack. The modem complies with FCC Class A and uses the standard AT command set.

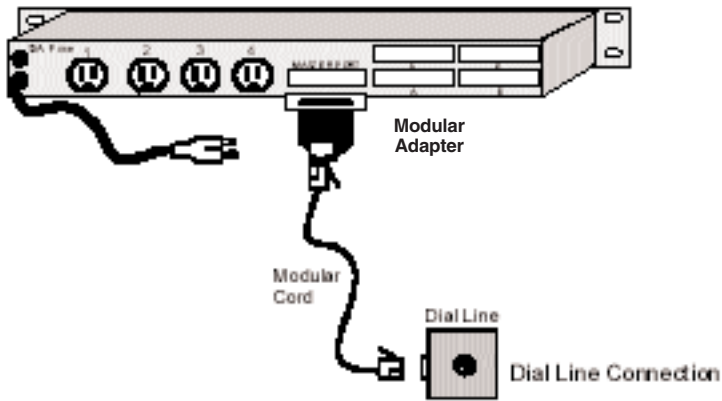


Figure 3-4. Connecting the modem to a dial line.

# 4. Operation

## 4.1 Four Modes of Operation

You can operate the Remote Management Switch in four possible ways: menu selection, escape code sequences, lead control, and manual control.

### 4.1.1 MENU SELECTION

By connecting to the master port, you can switch to any of the four ports (A through D) or operate any of the four relays. The menu system allows convenient naming of each port and relay, as well as allowing setup of all Remote Management Switch parameters. A login procedure protects the menu system from unauthorized access.

### 4.1.2 ESCAPE CODE SEQUENCES

You can bypass menu operation by transmitting escape codes to the master port of the Switch. You can partially define these escape codes through the setup menus.

### 4.1.3 LEAD CONTROL

This option allows any of the four ports to access the master port by raising its Request to Send (RTS) or Data Terminal Ready (DTR) control lead. This is an alternative to menu selection (described in **Section 4.1.1**).

### 4.1.4 MANUAL CONTROL

You can select ports locally via a front-panel pushbutton on the Switch.

## 4.2 Menu Control

You can control the Remote Management Switch principally through an ASCII terminal interface. Connect to the modem using a terminal or PC running terminal emulation software. The factory default parameters for communication are (9600, 8, n, 1):

- 9600 bits per second
- 8 data bits
- no parity
- 1 stop bit

The Remote Management Switch automatically detects the rate of operation, allowing connection at 300 bps to 115.2 kbps. Using the default speed will allow the fastest access to the unit. To invoke the auto rate detector, press the Enter key one or more times as needed. When the Switch detects the rate, it will respond with the security login prompt:

Login >

Enter the default security code (the default code is "TEST," all caps, case-sensitive). Three incorrect attempts to enter the security code will cause the Switch to terminate the call. When you enter the correct code, the main menu appears.

```
Remote Management Switch   Ver XXX

1) Port Selection
2) Relay Control
3) Programming
X) Logout

Enter >
```

**Figure 4-1. Main menu.**

#### 4.2.1 PORT SELECTION

From the main menu, choose 1) Port Selection. This selection connects the master port to any of ports A through D. The port-selection menu shown in Figure 4-2 appears.

```
A) PORT A
B) PORT B
C) PORT C
D) PORT D
X) Exit

Enter Port >
```

**Figure 4-2. Port-selection menu.**

Once you select a port, the Switch will clear the screen and generate the following message:

```
x Selected (x=the programmed name of the port)
Enter ESC{PASSWORD}ESC to return to menu
```



## REMOTE MANAGEMENT SWITCH

At this point, the master port is connected through to the port selected. The Remote Management Switch is passive to the messages sent between the master port and the port selected. To terminate the session with the current port and bring back the menu, enter the escape character plus the security code and another escape character (for example: <Esc>TEST<Esc>).

### 4.2.2 POWER CONTROL

This selection allows control of the outlets in the Remote Management Switch.

```
1) Eng Outlet 1
2) Eng Outlet 2
3) Den Outlet 3
4) Eng Outlet 4

# - Select relay to toggle
P# - Pulse relay
X - Exit

Enter >
```

**Figure 4-3. Controlling outlets.**

Again, you can name each relay. Eng (Energized or ON) and Den (De-energized, or OFF) display the current status of the relay. To toggle the relay, simply enter the relay number, followed by Enter.

The outlet can also be cycled (pulsed) by entering P plus the number (for example, P1 to cycle relay number 1). The length of time the outlet pulses is preset through the programming menu. While the relay is cycling, a cycling message will be displayed as shown in Figure 4-4.

```
1) Den Outlet 1=>cycling
2) Eng Outlet 2
3) Den Outlet 3
4) Eng Outlet 4

# - Select relay to toggle
P# - Pulse relay
X - Exit

Enter >
```

**Figure 4-4. Cycling.**

## 4.2.3 PROGRAMMING

```

1) Device labels
2) Password
3) Baud: 19200
4) Parity/Data: N,8
5) Lead: N
6) Resp: Y
7) Mode: Modem
8) Cycle time: 5
9) Time out: 0
X) Exit

Enter >1

```

Figure 4-5. Programming menu.

1) **Device Labels.** This lets you change the screen labels for the ports and power-control outlets.

```

A) PORT A
B) PORT B
C) PORT C
D) PORT D

1) Outlet 1
2) Outlet 2
3) Outlet 3
4) Outlet 4

X) Exit

Enter >

```

Figure 4-6. Device labels.

Enter the label you want to change. The current label is displayed, along with a prompt for the new name. Type in a new label and then confirm the selection. Labels can be up to 24 characters.

```

CURRENT LABEL PORT A PORT A
NEW LABEL PORT A> Your New Name

PORT LABEL CHANGED FROM PORT A
TO Your New Name
SAVE CHANGES? (Y/N) >

```

Figure 4-7. Entering new label name.

**2) Password.** The password is used for logging into the menu system and in every escape sequence. *The factory-default password is "TEST."* The security code may be 1 to 8 characters. These characters can be any ASCII character except NULL (00 hex). To change the password, you must re-enter the current password. A prompt for a new password appears. After you enter the new password, a confirmation appears.

```
LOGIN > TEST
ENTER NEW PASSWORD > TEST
RE-ENTER NEW PASSWORD > TEST
PASSWORD CHANGED
```

**Figure 4-8. Entering a new password.**

**3) Baud Rate.** The Remote Management Switch can operate at speeds from 300 to 115,200 bps. Simply enter the desired baud rate followed by the Enter key. Valid selections are 300, 600, 1200, 2400, 4800, 9600, 19,200, 38,400, 57,600, and 115,200.

The baud rate set only affects the code and menu control of the Switch. Once connection to a port is made, the Switch is transparent to the speed and character format sent.

**4) Parity and Data Bits.** The Remote Management Switch can operate with a 7- or 8-bit data frame, and odd, even, or no parity. You need only set the parity: None, Even, or Odd. The Switch automatically determines the number of data bits and stop bits.

**5) Lead Control.** This selection determines whether control leads from the switched ports can be used to access the master port. The factory default is lead control disabled. Select Yes or No.

**6) Command Response.** The Switch can send a response to escape sequences to let the operator know that the switch has taken place. The factory default is responses disabled. Select Yes or No to change the setting.

**7) Modem or Terminal Mode.** Sets the Switch for either terminal or modem use. Each time you select 7 Mode, this setting toggles.

- **Modem mode:** The Remote Management Switch monitors the DCD lead from the master port. Once the call is established, send the Escape to invoke the auto rate detector, if required, then the Enter key to generate the Login prompt, or any valid control code. Three unsuccessful login attempts causes the Switch to hang up the modem. Use this setting when the Switch is connected to a dial modem.

- Terminal mode: The Remote Management Switch does not monitor the connection status of the master port. This mode allows an unlimited number of login attempts. Each time it receives an enter key, the Switch issues a new login prompt. After three tries, the login prompt is suppressed to allow you to enter control codes. Use this mode for direct cable connections from a PC or terminal to the Switch.

**8) Cycle Time.** Sets the length of time in a relay Cycle command. This time is set once for all relays controlled. Selections from 1 to 255 are valid.

**9) Time Out.** To prevent one port from dominating access to the master port and locking out other selections, the Switch incorporates a timeout feature. With this feature enabled, the Switch monitors the data activity received by the master port. When no data is received by the time as set, the currently selected port is de-selected. Set the Timeout from 1 to 99 minutes. Setting the Timeout to 0 (the default setting) disables the feature and allows unlimited time with no data received. The timeout feature affects all selection modes.

**X) Exit the Programming Mode.** Exit the programming menu and activate all current settings. If you have changed the baud rate and/or character format, Exit will enable those changes. From the main menu, "X" terminates the current session and a new connection to the Remote Management Switch will be required. The calling system must terminate the session and hang up the modem.

### 4.3 Escape Code Control

The Remote Management Switch allows direct computer control using simple ASCII strings. These codes can control the port selection and relay operation. To access the Switch for code control, enter the commands as shown below. To invoke the auto-rate detector, press the Escape key one or more times, until the Switch responds with **BLACK BOX READY**.

<Esc> The Escape character (Decimal 27 Hex 1B)

<Sec> The Security code (Default=TEST)

<x> The Port letter (A-D)

<n> The Relay number (1-4)

<EOT> The End of text character (Decimal 04 Hex 04 Ctrl+D on the IBM® keyboard)

Select Port <Esc><Sec><x>

## REMOTE MANAGEMENT SWITCH

Deselect Port <Esc><Sec><EOT>

Toggle Outlet <Esc><Sec>R<n>

Query Status <Esc><Sec>?

Access Menu System <Esc><Sec><Esc>

### CODE CONTROL RESPONSES

The Remote Management Switch has an option to allow confirmation of switching commands. With this option enabled, the Switch will report back:

n selected	Where “n” is the current port number or name (if programmed)
no ports selected	When all ports are de-selected
r<status>	Indicating the relay (number “r”) has been changed <status> will be ENERG for energize or DE-ENERG for de-energized status
n selected 1E 2D 3E 4D	Response to Query command (E=Energized, D=De-energized)

Responses to Code Control commands are optional and set via the Programming menu.

## 4.4 Lead Control of Ports

The Remote Management Switch can automatically select ports via control leads. You must set up this feature before using the Switch. Any port can access the master by raising the RTS or DTR lead (jumper selectable) provided no other port is already connected by Menu, Manual, or Code Control. If another port is connected, the request is placed in queue. The queue is first-in, first-out.

Once a port has been connected via lead control, it remains connected until the control lead has gone low. If a port has been manually selected, and another port requests access, the manually selected port remains active until it is deselected via Menu, Code, or Manual Control.

## **4.5 Manual Control of Ports**

You can control the Switch manually via the pushbutton switch on the front panel. Each time you press the button, the port will cycle to the next port. To return the Switch to automatic operation, press the pushbutton switch for over two seconds. All port LEDs will turn off.

The Timeout feature, if enabled, continues to operate when manual control is established. To override this feature, select Timeout=0 from the Programming menu.

When manual control is selected, lead control is locked out. Escape codes will override the manual selection only in terminal mode.